Permit Fact Sheet

General Information

Permit Number:	WI-0049760-05-0	
Permittee Name:	VILLAGE OF POPLAR	
Address:	PO Box 137 4932 S Village Road	
City/State/Zip:	Poplar WI 54864	
Discharge Location:	10435E Bayfield Road, Poplar (SW¼ SW¼ of section 33; T48N-R11W)	
Receiving Water:	Unnamed Tributary to Bardon Creek within the Amnicon and Middle Rivers Watershed in the Lake Superior Drainage Basin in Douglas County	
StreamFlow ($Q_{7,10}$):	0 cfs	
Stream Classification:	In NR 104, Bardon Creek is classified as a limited forage fish community where it is joined by the unnamed tributary. The unnamed tributary is a limited aquatic life stream.	
Wild Rice Impacts:	No impacts identified. No wild rice waters inventoried on the surface water.	
Design Flow(s)	Annual Average	0.057 MGD
Significant Industrial Loading?	No	
Operator at Proper Grade?	Ye	
Approved Pretreatment Program?	N/A	

Facility Description

The Village of Poplar wastewater treatment facility serves a population of approximately 350 with no significant industrial contributors. The annual average design flow is 57,000 gallons per day with actual flows averaging 50,000 gallons per day over the past five years (2014 – 2018). Treatment consists of an inclined screen which removes debris before it enters the first aerated (air added) lagoon. The lagoon is covered and divided into two cells by a floating baffle (cells 1 and 2). The wastewater flows from cell 2 to the second covered aerated lagoon which is also split into two cells (3 and 4). From cell 4 the waste flows to a third covered lagoon that is partially-aerated (cell 5) then to a covered un-aerated settling lagoon (cell 6). In each lagoon naturally occurring bacteria already in the wastewater treat the waste stream by breaking down the organic matter. The effluent from the settling lagoon is routed through a polishing reactor for effluent aeration which reduces BOD and ammonia levels. The effluent from the polishing reactor flows by gravity through an effluent sampling manhole and then to the outfall (an unnamed tributary to Bardon Creek).

Proposed Permit Reissuance

The Department anticipates an effective date of January 1, 2020 for the proposed permit. Therefore, to allow a full permit term of five years, the proposed permit's expiration date is December 31, 2024. If the permit reissuance process takes more or less time than anticipated, the permit's dates of effectiveness and expiration may be changed accordingly.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	INFLUENT An average of 0.048 MGD (2014-2018)	Flow shall be measured through the influent manhole. Representative influent samples shall be collected on the downstream side of the screen prior to the first aerated lagoon
001	EFFLUENT An average of 0.050 MGD (2014-2018)	Representative samples shall be collected at the effluent manhole. The permittee is authorized to discharge to a tributary to Bardon Creek within the Amnicon and Middle Rivers Watershed in the Lake Superior Drainage Basin in Douglas County.
002	SLUDGE Last removed in 2009. An estimate of 0.04 dry US tons per year (from application)	Representative sludge samples shall be collected at a time and in a manner appropriate for the test required.

Substantial Compliance Determination

	Compliance?	Comments	
Discharge limits	Yes	Limits being met with exception of a couple BOD limit exceedances reported during permit term; trends will continue to be monitored.	
Sampling/testing requirements	Yes		
Groundwater standards	N/A		
Reporting requirements	Yes	A few monthly DMRs were received late; trends will continue to be monitored.	
Compliance schedules	Yes	Recommend monitor sludge depths during year 2 of permit term.	
Management plan	N/A		
Operator at proper grade	Yes	Randy is OIC. New operations staff recently hired who will train and eventually become certified operator(s).	
Other		Application for IPV due to economic hardship. If approved, annual PMP reporting will be required.	
Current plant subclass	A4, Stabilization Ponds and Aerated Lagoons		
Enforcement considerations	None		
In substantial compliance?		Compliance Inspection performed 9/6/2018	
	Concurrence: Eric R. de Venecia		Date: 9/19/2018

1 Influent - Proposed Monitoring

Sample Point Number: 701- Influent Manhole

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD5, Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Flow Prop Comp	

Changes from Previous Permit & Explanation of Limits and Monitoring Requirements:

No changes from the previous permit. The parameters are standard monitoring requirements and frequency for minor municipal facilities with a biological treatment plant. Tracking of BOD_5, and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code.

2 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- Effluent Manhole

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD5, Total	Monthly Avg	20 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
Dissolved Oxygen	Daily Min	4.0 mg/L	Weekly	Grab	
pH Field	Daily Max	9.0 su	Weekly	Grab	
pH Field	Daily Min	6.0 su	Weekly	Grab	
Phosphorus, Total	Monthly Avg	7.0 mg/L	Weekly	24-Hr Flow Prop Comp	Interim Limit. See phosphorus and schedules sections for more

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					information.
Phosphorus, Total		lbs/day	Weekly	Calculated	Calculate daily mass on the same days of phosphorus sampling. Mass (lbs/day) = Concentration (mg/L) x Flow (MGD) x 8.34.
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	Sampling is required during the 2022 calendar year.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Sampling is required during the 2022 calendar year.

Changes from Previous Permit & Explanation of Limits and Monitoring Requirements:

The monitoring frequency and limits for **Flow**, **BOD5**, **Suspended Solids**, **Dissolved Oxygen** and **pH** have not changed from the previous permit term. All categorical limits are based on NR 104.02 and NR 210 (Subchapter II) Wis. Adm. Code. More information on calculating limits for these parameters as well as **Ammonia**, **Phosphorus**, **Temperature**, **Chloride** and **WET Testing** can be found in the "Water Quality-Based Effluent Limitations for the Village of Poplar (WI-0049760)" memo dated June 19, 2019.

BOD and **Total Suspended Solids -** Categorical limits for BOD and TSS are required per NR 104 and 210.05, Wis. Adm. Code.

Dissolved Oxygen - Categorical limits for Dissolved Oxygen in a Limited Forage Fish are found in NR 104.02(3)(a).

pH – Categorical limits for pH are required per NR 210 (Subchapter II) Wis. Adm. Code.

Phosphorus - Phosphorus requirements are based on the Phosphorus Rules that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. Currently in NR 217 Wis. Adm. Code there are two methods used to determine if a phosphorus limit is needed: a technology based effluent limit (TBEL) and a water quality based effluent limit (WQBEL).

A TBEL of 1 mg/L is not needed because the facility discharges less than the threshold of 150 pounds per month.

During the last permit reissuance, the facility was notified that a restrictive WQBEL of **0.075 mg/L (six-month average)**, **0.036 lbs/day (six-month average)** and **0.225 mg/L (monthly average)** will be required at the end of a compliance schedule that detailed the steps needed to work toward meeting that goal. An interim phosphorus limitation of 7.0 mg/L was given.

In the fourth-year report and Phosphorus Pollutant Minimization Plan, (action items from the compliance schedule) the facility determined that an upgrade to the current facility was needed to maintain permit limitations, but the additional costs of the technology needed to meet the final WQBEL was not financially feasible. The permittee is not able to meet the requirements of the Multi Discharger Variance, therefore; an application for an individual variance was submitted March 7, 2019. The level currently achievable (LCA) is **7.0 mg/L** (1-day p99 for data January 2018 to January 2019) has been set as the variance limitation.

This permit contains a variance to the water quality-based effluent limit (WQBEL) for phosphorus granted in accordance with s. 283.15, Wis. Stats. As conditions of this variance, the permittee shall (a) maintain effluent quality at or below the interim effluent limitations specified in the table above, (b)) implement phosphorus pollutant minimization measures

specified in the Pollutant Minimization Plan (PMP) dated October 2018, and (c) perform the actions listed in the schedule section of the permit. (See the Schedules section 4.1.)

Ammonia - Using current acute and chronic ammonia toxicity criteria found in Tables 2C and 4B of NR 105 Wis. Adm. Code (effective March 1, 2004) and limit calculating procedures (Subchapter IV of 106, Wis. Adm. Code (update effective September 1, 2016). Ammonia limitations were calculated for the facility. Daily Maximum, Weekly Average and Monthly Average limits were considered, but it was determined effluent ammonia limits are not needed this permit term because corresponding p99 values are well below the calculated limitations. Monthly monitoring during the 2022 calendar year is required in preparation for the next reissuance.

Thermal -Using the administrative rules for thermal discharges detailed in NR 102 Wis. Adm. Code effective October 2010, effluent thermal limits were calculated. The calculated thermal limits for a tributary to Bardon Creek (Limited Aquatic Life) indicate a daily temperature limit of 86 degrees F. Effluent temperatures from aerated lagoon systems have not reported temperatures above 78 degrees and are not expected to reach this level, therefore, limits are not required this permit term.

Chloride – A water quality based effluent limit for chloride is not needed this permit term. The mean effluent chloride concentrations and p99 values are well below calculated limits. Quarterly samples are required during the 2022 calendar year in preparation for the next permit reissuance.

Disinfection - Effluent disinfection is not required, because the receiving water is not classified for recreational use under Wisconsin Administrative Code NR 104.

WET Testing – A WET Checklist was prepared to determine the number of WET tests that are needed. As toxicity potential increases, more points accumulate, and more monitoring is required to assure toxicity is not occurring over the short (acute) and long (chronic) term. Based on the total points accumulated and Chapter 1.3 of the WET Guidance Document WET Tests are not required this permit term.

3 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Liquid	The facility may remove sludge during the permit term. If sludge is removed it will be placed in geobags for dewatering. Final disposal will be to a landfill, taken to another facility or land applied. Plans are dependent on funding and have yet to be finalized.			
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? All water supply is provided by private wells. The nearest facility with a water supply is Middle River Health and Rehabilitation Center, in 2015 the gross alpha was below the level of detection which correlates to a Radium-226 level below 2 pCi/liter. If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility.						
Is a priority pollutant scan required? No Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 002- Sludge Outfall

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Once	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Once	Composite	
Phosphorus, Total		Percent	Once	Composite	
Phosphorus, Water Extractable		% of Tot P	Once	Composite	
Potassium, Total Recoverable		Percent	Once	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	

Changes from Previous Permit & Explanation of Limits and Monitoring Requirements:

Sludge may be removed during the permit term. If sludge isn't removed List 1 (solids & metals) and PCBs shall be monitored once in 2021. If removal occurs before then, samples for List 1, 2, 3, 4 and PCBs shall occur before removal. If removal occurs after sampling of Lists 1 and PCBs in 2021, sampling for List 2, 3 and 4 shall occur before removal. Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5) Wis. Adm. Code.

Water extractable phosphorus (WEP) - is the coefficient for determining plant available phosphorus from measured total phosphorus. In Wisconsin, the Penn State Method is utilized and is expressed in percent. While a total P may be significant, the WEP may show that only a small percentage of the P is available to plants because of factors such as, treatment processes and chemical addition that "tie-up" phosphorus limiting the amount of phosphorus that is plant available. As part of the Wisconsin's nutrient management plan (NMP) requirements, the accounting of all fertilizers must be included over the NMP cycle. The fertilizer value of the waste needs to be communicated to the farmer and accounted for in the NMP.

4 Compliance Schedules

4.1 Phosphorus Pollutant Minimization Plan

The permittee operates a lagoon system and has been granted a variance to the water quality based effluent limitation for phosphorus pursuant to s. 283.15, Wis. Stats. As a condition of the variance the permittee shall perform the following actions.

Required Action	Due Date
Annual Phosphorus Progress Report: Submit an annual Phosphorus Progress Report. The annual Phosphorus Progress Report shall: Indicate which phosphorus source reduction measures or activities outlined in the approved Phosphorus Pollutant Minimization Plan have been implemented; Include an analysis of trends in monthly average and six-month average effluent phosphorus concentrations and mass discharge of phosphorus based on sampling and flow data; Include an analysis of how effluent phosphorus varies with time and with any significant loadings of phosphorus. The first annual Phosphorus Progress Report is to be submitted by the Due Date.	12/31/2020
Annual Phosphorus Progress Report #2: Submit an annual Phosphorus Progress Report as defined above.	12/31/2021
Annual Phosphorus Progress Report #3: Submit an annual Phosphorus Progress Report as defined above.	12/31/2022
Annual Phosphorus Progress Report #4: Submit an annual Phosphorus Progress Report as defined above.	12/31/2023
Final Phosphorus Report: Submit a final report documenting the success in reducing phosphorus concentrations in the effluent as well as the anticipated future reduction in phosphorus sources and phosphorus effluent concentrations. The report shall summarize phosphorus source reduction measures that have been implemented during the current permit term and state which, if any, source reduction measures from the approved Phosphorus Pollutant Minimization Plan were not pursued and	06/30/2024

why. The report shall include an analysis of monthly average and six-month average effluent phosphorus concentrations and mass discharge of phosphorus based on sampling and flow data covering the current permit term. The report shall also include an analysis of how effluent phosphorus varies with time and significant loadings. Additionally, the report shall include a proposed variance limit and source reduction measures for negotiations with the department if the permittee intends to seek a renewed phosphorus variance per s. 283.15, Wis. Stats.	
Annual Phosphorus Reports After Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual phosphorus reports each year covering source reduction measures implemented and phosphorus concentration and mass discharge trends.	

Explanation of Compliance Schedules

This compliance schedule requires Poplar to work toward reducing phosphorus entering the facility and optimize their current facility. Additional reports are required through the end of the permit term as the facility works toward the WQBEL.

Attachments:

Water Flow Schematic(s)

"Water Quality-Based Effluent Limitations for the Village of Poplar (WI-0049760)" memo dated June 19, 2019

Proposed Expiration Date:

December 31, 2024

Justification Of Any Waivers From Permit Application Requirements

A decision has been made not to require effluent monitoring for metals in the application because of the low design flow (0.057 MGD) of this facility; the very low actual flows (an average of 50,000 gallons per day; the metals in the sludge are well below high quality limits which correlates to low metal concentrations in the effluent; and the wastewater is all domestic with no industrial contributors to the collection system. In addition, the Village does not have a public water supply system and does not have any control over corrosivity in the influent wastewater.

Prepared By:

Sheri A. Snowbank Wastewater Specialist

Date: July 15, 2019

cc: Eric de Venecia, Superior